

Effect of Different UV Light Intensity on Porous Silicon Fabricated by Using Alternating Current Photo-Assisted Electrochemical Etching (ACPEC) Technique

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Abstract. Alternating current (sine-wave a.c (50Hz)) photo-assisted electrochemical etching (ACPEC) process was used to produce the formation of porous silicon with different ultraviolet (UV) light intensity. The study aims to investigate the effect of different UV light illumination on the properties of porous silicon. The surface of n-type silicon (111) was selectively etched in the HF and ethanol solution with a ratio (5:20) for 30 minutes under different UV lamp intensity; 10%, 30% and 60%. The samples were characterized by using atomic force microscopy (AFM) and X-ray diffraction (XRD). The AFM measurements revealed porous silicon with 30% of UV light intensity has the highest surface roughness value with a pyramidal shape. XRD analysis showed FWHM value of etched samples increased as the crystallite size of the etched sample decreased.